PREFACE

Praise and gratitude the writer prayed to God for all of His grace so that this thesis can be completed well in accordance with the planned time. This thesis entitles "The Effect of The Problem Based Learning Model To Improve The Physics Learning Outcomes of Class XI Student On Sound Wave Materials." was prepared to obtain Bachelor of Education(S1) in Physics Education, Faculty of Mathematics and Natural Science, State University of Medan.

The author realizes that this thesis is still far from perfection, therefore the author really expects input from various parties in the form of constructive criticism and suggestions for the improvement of this thesis. On this occasion the author would like to say thank to:

- Mr. Prof. Dr. Syamsul Gultom, S.KM., M.Kes as the Chancellor of State University of Medan.
- Mr. Prof. Dr. Fauziyah Harahap, M.Si., as the Dean of the Faculty of Mathematics and Natural Science, State University of Medan.
- Mr. Dr. Jamalum Purba, M.Si., as the Deputy Dean for Academic Affairs, Mrs. Dr. Ani Sutiani, M.Si., as the Deputy Dean for Finance and Personnel, and Mr. Dr. Rahmatsyah, M.Si., as the Deputy Dean for Student Affairs Faculty of Mathematics and Natural Science, State University of Medan.
- Mrs. Dewi Wulandari, M.Si., as the Head of the Physics Department, and Mrs. Dr. Yuni Warty, M.Si., as the Secretary of the Physics Department.
- 5. Mr. Sabani, S.Pd., M.Si., as the Head of the Physics Education Study Program.
- Mr. Prof. Drs. Togi Tampubolon, M.Si., Ph.D., as my thesis supervisor that who has given a lot of advice, motivation and suggestions to author from the beginning until the completion of this thesis.
- Mr. Muhammad Kadri, S.Sc., M.Sc., Ph.d., Mrs. Dr. Mariati P. Simanjuntak, M.Si., and Mr. Deo Demonta Panggabean, M.Pd., as my examiners who have provided a lot of constructive input and suggestions in improving the writing of this thesis.
- Mr. Dr. Rahmatsyah, M.Si., as my academic supervisor who has provided advice and motivation began to receive authors in this Department of Physics.
- Mr. Abdul Rais, S.Pd., S.T., M.Si., and Mr. Budiman Nasution, S.Pd., M.Si., as the content validator for my test instrument validity.
- Mrs. Dr. Ely Djulia, M.Pd., as the coordinator of Bilingual class who gave support during my study in Bilingual Class.
- 11. Mr. Ridwan Tampubolon, S.Pd., M.M., as the Principal of SMA Negeri 1 Sidamanik and especially to Mrs. S. Napitupulu, as the physics teacher who helped and guided the author in conducted research at SMA Negeri 1 Sidamanik.
- 12. All of the students of XI IPA 1 and XI IPA 2 SMA Negeri 1 Sidamanik as my research sample who gave the chance to do this research.
- 13. In particular, the author would like to express her deepest gratitude to the people whom author really loves about, to my beloved parents Mr. Parlin Lubis and Mrs. Tiodor Br. Dabukke, who always provide support in terms of material, motivation, advice and especially for prayer and affection so that the author can complete study at State University of Medan.
- 14. The author would like to thank to all my siblings Jenny Lubis, Jhonny Lubis, Meryanti Lubis, Enjelina Lubis, Apriani Lubis, Feby Lubis, and especially for my younger sister

Widya Lubis who always provide support in terms of motivation, advice and especially for prayer to author can complete study at State University of Medan.

- 15. The author also would like to thank to my lovely classmates Bilingual Physics Educations 2019 who gave me support and thanks for our togetherness during four years of the lecture process, especially for Claudya Von Munthe thanks for being a kind person for me and thanks for all the joys and sorrows that we passed together during lectures.
- 16. For my bestfriend from "Gurls Termateeer" (Vera Hutapea, Fiona Sitompul, and Selly Sinaga) and Dwi Christine Girsang, thanks for always be there for me and giving me unconditional love.
- 17. Last but not least, I wanna thank me for believing in me, I wanna thank me for doing all this hard work, I wanna thank me for having no days off, I wanna thank me for never quitting, I wanna thank me for always being a giver and tryna give more than I receive, I wanna thank me for tryna do more right than wrong and I wanna thank me for being me at all times.

Finally, the author expresses his gratitude for all the support and assistance from various parties in order to complete this thesis. Hopefully this thesis can be useful for readers, Lord Jesus Bless.

Medan, August 31th 2023 Author,

Tia Pebrianti Ulina Lubis IDN. 4192421019